

Dawn Career Connections Activity Draft

Overview: After sharing their preconceptions about science and engineering, students investigate the career opportunities available in these fields by reviewing the *Occupational Outlook Handbook (OOH)*, a publication of the Bureau of Labor Statistics. Students then get a chance to meet some of the Dawn scientists and engineers and discover the personal interests, skills, educational and occupational experience that led to their involvement with the mission. To conclude this activity, students create a mock resume that is a composite of select Dawn scientists and/or engineers.

Student Objectives:

- Communicate preconceptions of careers in science and engineering.
- Expand awareness of careers in science and engineering and requisite knowledge, skills, educational and occupational experience related to these fields.
- Develop skills in writing a resume.

Target Grades: 6-12

Estimated Time: 2 class periods

Materials:

- Markers, colored pencils, old magazines, scissors, glue for preconception activity
- Letter-size blank paper (one per student)
- Two large pieces of butcher paper and rolls of masking tape (for class display)
- Computers with Internet access and word processing software for researching the *Occupational Outlook Handbook*, accessing interviews of Dawn mission team members, and creating resumes
- Computer with projector for displaying the *Occupational Outlook Handbook*
- Alternate to Computers: Print-outs of select science and engineering-related careers from the OOH, select Dawn interviews, and paper for writing resumes
- Optional: A copy of the *Occupational Outlook Handbook* [Notetaking Sheet](#) (one per student)
- [Resume Template](#) (access electronically or provide a copy for each student)

Procedures:

Warm-up Activity: Exploring Preconceptions of Scientists and Engineers

1. In this activity, students reveal their preconceptions (and perhaps misconceptions) about scientists and engineers. Distribute letter-size blank paper and materials for drawings and/magazine cut outs. Display two large pieces of butcher paper on the classroom walls. One butcher paper should have the heading “Scientists at Work,” the other should read “Engineers at Work”
2. Divide the class in half. Explain to students that they will create a class collage comprised of their own visions of scientists and engineers. Instruct half the class to draw a picture of

a scientist and the other half will draw an engineer. You may want to prompt students by saying:

When I say the word scientist or engineer, who do you picture in your mind? What does this person look like? What does this person do? On your blank piece of paper, draw a picture of this person. Or, as an alternative, you may cut-out pictures from a magazine and paste them onto your piece of paper. When you are finished, tape your visual in the appropriate display for either scientists or engineers.

3. Allow 15-20 minutes for students to create and display their visuals.
4. Facilitate a class discussion about the visual displays by asking students:
What are some of our preconceptions of scientists and engineers? That is, what are some of the opinions we may have formed about scientists or engineers? What might these opinions be based on? Which preformed ideas may be correct? Which are incorrect or misconceptions? Are there any images that focus on space science or aeronautical engineering?
5. Using a computer with a projector, display the Careers page of the Dawn mission Web site. Explain to students that even within a single space science mission, such as NASA's Dawn mission to the asteroid belt, there are countless careers represented. For the purposes of this activity, students will be looking more closely at careers in science and engineering.

Researching the Occupational Outlook Handbook

6. Click on the link to the *Occupational Outlook Handbook* from the Dawn Careers page. Tell students that they will be learning more specific information about careers in either science or engineering by searching through *The Occupational Outlook Handbook*, a publication of the Bureau of Labor Statistics that contains information about a wide range of career options that are available to today's students.
7. Instruct students to research information about either a science or engineering-related career using either the Dawn Careers Web page or pre-printed materials from the OOH. They should review information that reveals:
a) the **nature of the work**; b) working conditions; c) **training, other qualifications, and advancement**; d) employment; e) **job outlook**; f) earnings; and g) related occupations. (Note: This is how the information in the OOH is presented).
8. Review the ways that students may search specific jobs/careers:
 - a. Using the Dawn Careers Cluster Page **(insert link)**.– Note: Most of the science and engineering related careers are included in the Professional and Technical Occupations Cluster. After selecting an occupation, a pop-up text box will provide a brief description as well as link to more detailed information in the OOH.
 - b. Once in the OOH, students may find a specific career by typing a search term, like “space,” “astronomy” or “aeronautics,” in the “Search the *Handbook*” box located in the upper right corner of any *Handbook* page. **(insert link)**.

Teacher Tip

To help structure the research process, distribute copies of [*The Occupational Outlook Handbook*](#) [Notetaking Sheet](#) for student use.

- c. For an alphabetized listing of jobs/careers in the OOH, click on “A-Z Index” located in the navigation bar at the top of any *Handbook* page. (insert link).
 - d. If students are interested in learning more specifics about aerospace careers, they may access a list of Internet resources from the Dawn Careers Web page.
9. Allow time (15-20 minutes) for students to research science and/or engineering careers.
10. Facilitate a class discussion with the following prompts: *What information surprised you? What information fit with your expectations? What did you find exciting about a particular science or engineering career? What did you think would be especially challenging?*

Meet the Dawn Team

11. Explain to students that they will learn even more specific career-related information by meeting some of the scientists and engineers working on NASA’s Dawn mission.
12. Project the Meet the Team: Interview Archive page of the Dawn mission Web site. (insert link).
13. Instruct students to select 2 or 3 different mission team members. Students are to read the corresponding interviews and note information about the mission team members’ career objective, education, professional development, related work experience, additional employment, professional development, skills and interests. They may use the resume template for their notes. Encourage students to keep notes brief; they should not simply copy information directly from the interview.

Build a “Composite” Resume

14. Using the information gathered from 2 or 3 interviews, students are to build a mock resume for Dawn Mission (placeholder - need a better name – open to suggestions). Reinforce to students that information in the resume should be a thoughtful synthesis of the select mission team members’ educational background, work experience, interests, and skills. For instance, students may have one Dawn team member’s information represented in education and another’s in related work experience; however, students need to ensure the information follows a logical progression. Or, students may combine each Dawn team members’ experience in each of the resume sections (e.g., one person’s undergraduate education with another’s graduate school)
15. Discuss the Resume template. Ensure students understand the kinds of information that are appropriate for each section. Students may feel free to modify the format to suit their needs.
16. Share a few examples of resumes while reviewing resume writing guidelines with students:

Teacher Tip

The Internet offers many resume writing resources that may be helpful to review or share with your students. A few you for your consideration are: (These URLs will likely be replaced with better ones)

http://www.crummer.rollins.edu/career_management/skills/resume.PDF

http://www.vtc.vsc.edu/section_career_services/..%5Cdownload%5CResume_guidelines.pdf

- Writing must be both concise and specific
 - Only include relevant information; information that supports the career objective
 - Begin explanations of work experience with strong action verbs. For a comprehensive list of “power verbs,” refer to http://www.vtc.vsc.edu/section_career_services/..%5Cdownloads%5CResume_guidelines.pdf for a fairly comprehensive list of “power verbs”
17. Students may not find all the information they need to create a resume in the Dawn team interviews. To help fill in any information gaps, students should consult the *Occupational Outlook Handbook* or the aerospace career resources; both accessible from the Dawn Careers Web page. Dates of the resume can be fictitious.(insert links to various resources)
18. While high school coursework and experience are not typically included in professional resumes, encourage students to imagine these professional’s high school experience and incorporate it into the mock resume. This will make the activity more relevant to the students and further illustrate how decisions and experiences from high school years can impact students’ career pathways.

Life Skills Standards Addressed¹

Life Work

Makes general preparation for entering the work force

- *Grades 9-12:* Makes an accurate appraisal of available work options, prior work experience, career goals, personal character, job references, and personal aptitudes

Self-Regulation

Performs self-appraisal

- *Grades K-12:* Understands how hobbies, personal interests, and aptitudes can lead to a career

Science Standards Addressed²

Science as a Human Endeavor

- *Grades 5-8:* Women and men of various social and ethnic backgrounds--and with diverse interests, talents, qualities, and motivations--engage in the activities of science, engineering, and related fields such as the health professions. Some scientists work in teams, and some work alone, but all communicate extensively with others.
- *Grades 5-8:* Science requires different abilities, depending on such factors as the field of study and type of inquiry. Science is very much a human endeavor, and the work of science relies on basic human qualities, such as reasoning, insight, energy, skill, and

¹ Kendall, J. S., & Marzano, R. J. (2004). *Content knowledge: A compendium of standards and benchmarks for K-12 education*. Aurora, CO: Mid-continent Research for Education and Learning. Online database: <http://www.mcrel.org/standards-benchmarks/>

² National Research Council (1996). *National science education standards*. Washington, DC: National Academy Press. <http://books.nap.edu/html/nses/html/>

creativity--as well as on scientific habits of mind, such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.

- *Grades 9-12:* Individuals and teams have contributed and will continue to contribute to the scientific enterprise. Doing science or engineering can be as simple as an individual conducting field studies or as complex as hundreds of people working on a major scientific question or technological problem. Pursuing science as a career or as a hobby can be both fascinating and intellectually rewarding.